

## REMARKS

Applicants appreciate the examination provided in the Office Action mailed May 16, 2007 ("Office Action"), the withdrawal of the prior rejections, and the indication that Claims 14-18, 32-34 and 37-38 recite patentable subject matter. Applicants have amended Claim 35 to correct a typographical error. Applicants respectfully request reconsideration and withdrawal of the rejections of Claims 1-13, 19-31, 35-36 and 39-43 for at least the reasons presented below.

### **Independent Claims 1 and 20 are patentable**

Independent Claims 1 and 20 stand rejected as allegedly anticipated by U.S. Patent No. 6,990,363 to Ito et al. ("Ito"). Office Action, p. 2. The Office Action states:

Ito discloses in figures 5-8, wireless communications device with an improved antenna structure, comprising a ground plane (ground pattern (2)); a conductor loop (the outer one of the ground pattern (2) serves as the conductive ground) overlying the ground plane (2); and wherein the monopole (whip or single antenna (3)) and the conductor loop (the outer ground pattern serves as a conductive ground) are configured to be coupled to a common feed-point (4). Col. 5, lines 33-67 to col. 10, lines 1-57.

Office Action, p. 2. Respectfully, this characterization of Ito is clearly erroneous.

There simply is no "conductor loop overlying the ground plane" described in the cited material from Ito. Figs. 5-7 show structures including a ground pattern 2 and various linear antennas 3 connected to a feed point 4, while Fig. 8 shows a ground pattern 2 and an antenna 3 including a linear portion connected to a feed point 4 and a plate portion. None of these structures include a conductor loop overlying a ground plane.

The reference to "the outer one of the ground pattern (2)" in the Office Action is unclear and appears to be irrelevant to the "conductor loop" recited in the claims. The only use of the phrase "outer one" in Ito is the phrase "most outer one of the ground pattern and the shields" found at column 5, lines 60-63, column 6, lines 56-58, column 7, lines 61-64, column 9, lines 6-9 and column 10, lines 18-21, but these passages fail to disclose or suggest anything about a "conductor loop overlying the ground plane." For example, the passage at column 6, line 53-68 through column 7, line 2, referring to Fig. 5 states:

In addition to the ground pattern 2 of the board, a shield of the case 1 and a shield for covering the circuitries or circuit parts on the circuit board also serve as ground. The most outer one of the ground pattern and the shields mainly serves as the conductive ground, on which the electric image to the antenna 3 is generated. The antenna 3 extends from the feeding point 4 which is asymmetrical to the conductive, ground in any directions, for example, both horizontal and vertical directions for avoiding cancellation of a majority of the high frequency currents on the conductive ground. Namely, the conductive ground has an asymmetrical distribution of the high frequency currents with reference to the antenna 3 for avoiding cancellation of a majority of the high frequency currents on the, conductive ground, thereby allowing generation of an electric image on the conductive ground to the antenna 3, resulting in an improvement in the radiation efficiency of the antenna.

In this passage, the "most outer one" refers to a most outer one of the *ground pattern and the shields*, which has nothing to do with a "conductor loop overlying the ground plane."

Thus, Ito does not disclose or suggest "a conductor loop overlying the ground plane." Ito also does not disclose or suggest "wherein the monopole and the conductor loop are configured to be coupled to a common feedpoint," as the recited "conductor loop" is not disclosed or suggested by Ito. Accordingly, Ito does not provide the teachings alleged in the Office Action and does not teach or suggest the recitations of independent Claims 1 and 20. For at least these reasons, Applicants submit that independent Claims 1 and 20 are patentable over Ito and the rejections of these claims and the claims depending therefrom should be withdrawn.

#### **Independent Claim 39 is patentable**

Independent Claim 39, which stands rejected as allegedly obvious with respect to a combination of Ito and U.S. Patent No. 6,774,856 to Back et al. ("Back") (Office Action, p. 6), recites:

A mobile terminal, comprising:  
a frame;  
a radio communications circuit supported by the frame;  
an antenna electrically coupled to the radio communications circuit, attached to the frame and comprising commonly fed conductor loop, monopole and helical elements.

The rejection of Claim 39 relies on the same erroneous interpretation of Ito provided in support of the rejections of independent Claims 1 and 20 and, for at least similar reasons discussed above with reference to the rejections of Claims 1 and 20, Applicants submit that Ito does not provide the teachings alleged in the Office Action.

The Office Action concedes that "Ito does not disclose the helical element," but alleges that Back provides the missing teaching and that "[i]t would have been obvious . . . to employ the helical antenna as suggested by Back in the antenna of Ito in order to create transmit and receive signal." Office Action, p. 6. This is clearly erroneous. The dual band antenna 20 shown in Fig. 1 of Back *is not helical*. Rather, the antenna 20 comprises two zigzag planar conductor patches 24, 25 mounted on opposite sides of a dielectric body 21. See Back, Figs. 3-6, column 4, lines 5-62. The patches 24, 25, whether taken individually or in combination, do not constitute a "helical element," as they include no helix-like structure.

Furthermore, the alleged motivation to combine Ito and Back presented in the Office Action is vague, conclusory and inadequate evidence of a motivation or suggestion to combine. For example, the Office Action provides no prior art evidence as to why adding the antenna shown in Back to Ito would "create transmit and receive signal." The antenna shown in Ito already is capable of receiving and transmitting signals, and the Office Action provides no indication as to what additional "transmit and receive" capability would be added by the antenna of Back, and provides no evidence as to how such a combination would even be implemented.

Accordingly, the cited combination of Ito and Back does not disclose or suggest the recitations of independent Claim 39, and the Office Action fails to provide adequate evidence of a motivation or suggestion to combine these references to provide the recitations of independent Claim 39. For at least these reasons, Applicants submit that independent Claim 39 is patentable, and that the rejection thereof should be withdrawn.

#### **The dependent claims are patentable**

Applicants submit that dependent Claims 2-19, 21-38 and 40-43 are patentable at least by virtue of the patentability of the respective ones of independent Claims 1, 20 and 39 from which they depend. Applicants further submit that, in addition to the Claims 14-18, 32-34

and 37-38 indicated as reciting patentable subject matter, several others of the dependent claims are separately patentable.

The rejections of several of the dependent claims depend on interpretations of Ito that suffer from flaws similar to those discussed above with reference to the rejections of independent Claims 1, 20 and 29. For example, in rejecting Claim 2 as being allegedly anticipated by Ito, the Office Action asserts that Ito teaches "wherein the conductor loop has a reflective feature therein" because "the conductor loop is conductive or current can drive it." Office Action, p. 3. The Office Action fails to indicate how the fact that something is conductive and "current can drive" corresponds to "a reflective feature" and, in any event, as discussed above, there is no conductor loop shown in Ito. Accordingly, Ito does not provide the teachings alleged, and does not disclose or suggest the recitations of Claim 2. For at least these reasons, Claim 2 is separately patentable. At least similar reasons support the separate patentability of Claim 21.

In rejecting Claim 4, the Office Action asserts that Figs. 5-8 of Ito disclose "wherein the conductor loop is rectangular." Office Action, p. 3. As Ito does not disclose or suggest a conductor loop, it clearly does not disclose or suggest a rectangular conductor loop. Accordingly, Ito does not disclose or suggest the recitations of Claim 4 and, for at least these reasons, Claim 4 is separately patentable. At least similar reasons support the separate patentability of Claim 23.

Claim 12, which stands rejected as allegedly obvious with respect to Ito (Office Action, p. 5), recites "a helical element arranged coaxial with the monopole and configured to be coupled to the common feedpoint." In rejecting Claim 12, the Office Action states "[r]egarding claims 12, 19 and 30, Ito essentially discloses the claimed invention but does not explicitly disclose that, the helical element is arranged coaxial." Office Action, p. 5. Respectfully, ***Ito does not disclose or suggest a helical element***, much less one arranged coaxial with a monopole. Accordingly, Ito does not disclose or suggest the recitations of Claim 12 and, for at least these reasons, Claim 12 is separately patentable. At least similar reasons support the separate patentability of Claims 19 and 30.

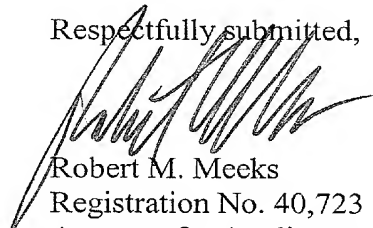
Claim 35, which stands rejected as allegedly anticipated by Ito (Office Action, p. 2), recites "wherein the frame comprises a clamshell housing having first and second rotatably

attached portions, wherein the ground plane comprises electrically coupled first and second portions disposed in respective ones of the first and second housing portions." Claim 36, which is similarly rejected, recites " wherein the first and second housing portions are mechanically joined by a hinge, and wherein the monopole and the helical element are positioned between the first and second housing portions and are aligned substantially parallel to an axis of rotation of the hinge." The Office Action alleges that the recitations of Claims 35 and 36 are taught by Ito in Figs. 5-8. Office Action, p. 4. These figures simply do not show anything corresponding to the recited clamshell housing, arrangement of ground plane portions therein, hinge, or arrangement of monopole and helical elements recited in Claims 35 and 36. Accordingly, Ito does not disclose or suggest the recitations of Claims 35 and 36 and, for at least these reasons, Claims 35 and 36 are separately patentable.

### Conclusion

For at least the foregoing reasons, Applicants submit that all of the claims are in condition for allowance. Applicants, therefore, request allowance of the claims and passing of the application to issue in due course. Applicants encourage the examiner to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

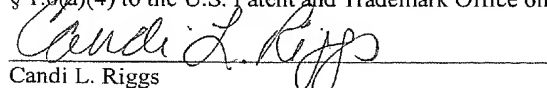


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### CERTIFICATION OF TRANSMISSION

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